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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|------------------------|---------------------|------------------|
| 10/663,359   | 09/16/2003  | Prashant G. Karandikar | M-102-E             | 1655             |
| 7590   | 12/19/2005  |                        | EXAMINER            |                  |
| M Cubed Technologies, Inc.<br>1 Tralee Industrial Park<br>Newark, DE 19711 |             |                        | DIXON, MERRICK L    |                  |
|  |             |                        | ART UNIT            | PAPER NUMBER     |
|  |             |                        | 1774                |                  |

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/663,359             | KARANDIKAR          |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Merrick Dixon          | 1774                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on rce filed 11-21-05.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-22 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-22 and 24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

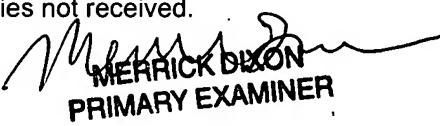
#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.



MERRICK DIXON  
PRIMARY EXAMINER

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9,12-22 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Papenburg et al(US 5505805) in view of Singh et al(US 6355340 B1).

The cited primary reference teaches the claimed invention including a mirror comprising elemental silicon bonded to a carbon-reinforced substrate comprising a composite body comprising silicon carbide metal, carbon fiber reinforcement and a coating material therein- col 6, lines 64-col 7, line 43; col 8, lines 5-61; col 13, lines 1-30; col 5, lines 65- col 6, line 27; col 7, lines 27- 31; col 9, lines 23-38.; col 5, lines 61-64. Although the primary reference teaches coating its substrates' surface, the secondary reference to Singh et al, however, teaches the aspect of carbon coating material- col 10, lines 46-58. It would have been obvious to one of ordinary skill in the art at the time the invention is made to combine the teachings of the secondary reference to Singh et al and utilize such types carbon coating as taught by the secondary reference, in the primary reference , in the absence of unexpected results motivated by the desire to impart desired characteristics to the resulting product – col 10, lines 60-65; col 9, lines 29- 44. Concerning claims 5 and 6, the reference teaches vapor deposition in col 7, lines 47- 51. Concerning claims 2-4, the reference in col 6, lines 25-32 teaches the claimed limitations. Concerning claims 8,19 and 22, the reference in col 8, lines 44-51 teaches

the limitations. See col 10, lines 15-30 also. Concerning claims 12 and 13, the reference teaches unidirectional carbon fibers in col 6, lines 49-54 and col 6, lines 60-63, respectively. Concerning claims 9,19 and 22, the reference teaches similar carbide-see reference. Concerning claims 20 and 21, the reference teaches the limitations in col 6, lines 19-32. Concerning claims 7 and 17, the reference teaches the claimed infiltration of the porous mass in col 6, lines 56-63 and rib-like structure in fig 8b. Concerning claims 15 and 16, it is apparent that as the cited reference teaches the claimed carbon fibers , such fibers would inherently possesses identical CTE values as claimed. Concerning claim 14, the reference teaches manipulation of the orientation and similar amounts of the plies in col 6, lines 56-62. concerning claim 24, the references' obvious combined teaching as set forth above and as discussed above.

3. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Papenburg et al('805) and Singh et al('340)) as applied to claims 1-9,12-22 and 24 above, and further in view of Bommier et al( '663).

The Bommier et.al reference teaches that it is known in the art to utilize woven carbon fiber material in carbon fiber reinforced material such as taught by the primary reference- col 1, lines 13-27. It would have been obvious to one of ordinary skill in the art at the time the invention is made to combine the teachings of the Bommier et al reference, ,and incorporate the obvious combined teachings of the above references with woven fiber tows in the absence of unexpected results (Bommier et al, col 1, lines 26-27). Concerning claim 11, it is submitted that such woven tows would indeed include

two-dimensional plies for the primary reference teaches multidirectional structure in col 6, lines 56-62.

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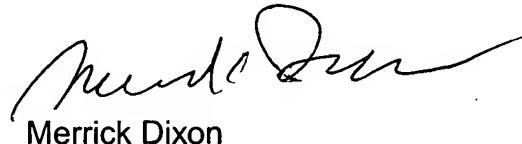
Applicants who wish to send a facsimile (draft copies) for the examiner's immediate review can do so by using the Examiner's personal fax number at 571-273-1520. The faxing of all papers must conform with the notice published in the Official Gazette, 1096 O.G. 30 ( November 15, 1989). **NOTE: All facsimiles sent to the examiner's personal fax number should be in draft-forms and will be treated as informal.**  
**Same facsimiles will not be entered in the related applications unless otherwise agreed and noted by the examiner.**  
**The fax number for all other fascimile is 571-273-8300.**

Information about **the status of an application** may be obtained from the Patent Information Retrieval system (**Private PAIR**).  
Status inquiries for **published applications** may be retrieved from either **Private PAIR** or **Public PAIR**. Questions about the PAIR system should be directed to the Electronic Business Center at **866-217-9197**.

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Any questions concerning the instant communication should be directed to Examiner Dixon, at 571-272-1520, Mondays, Wednesdays and Thursdays, between 12 noon and 8 PM, eastern time .



Merrick Dixon

Primary Examiner

Group 1700